NIMA Response To OGC's Catalog Service Interfaces RFI

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Agenda

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Purpose Of Catalog Service Interfaces RFI

- **OGC Catalog Service Interfaces RFI solicits information on geospatial catalog requirements, digital catalog architectures, & information on relevant technologies.**
- **OpenGIS Services Working Group will use this RFI to:**
  - **Develop one or more RFPs to solicit implementation specifications to support catalog service interfaces, including any necessary additional interfaces or extensions to existing interfaces.**
  - **Append requirements to planned specifications, solicitations for new OpenGIS resources or revisions to exisiting OpenGIS resources to make them more robust.**

Objectives of NIMA Response

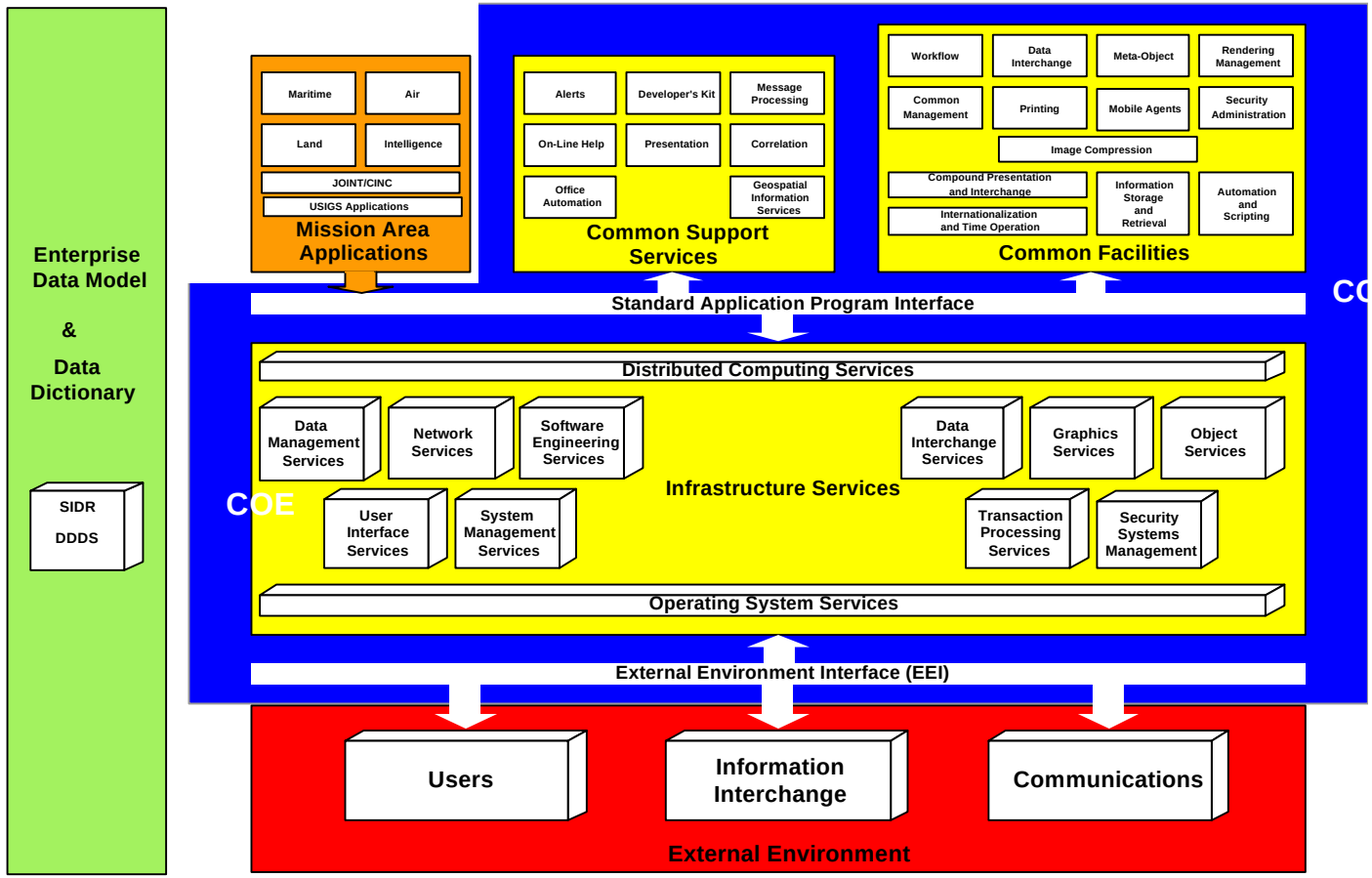
- **USIGS system components, network resources, and interoperability mechanisms will provide customers with catalog services for search, access, and retrieval of available holdings of geospatial and imagery data.**
- **Accomplish this through the implementation of a set of digital library services to meet these goals.**
- **Take advantage of unique and innovative method to influence direction of commercial sector to build interfaces into COTS software products that satisfy requirements for digital library services.**

Guiding Philosophy of NIMA Response

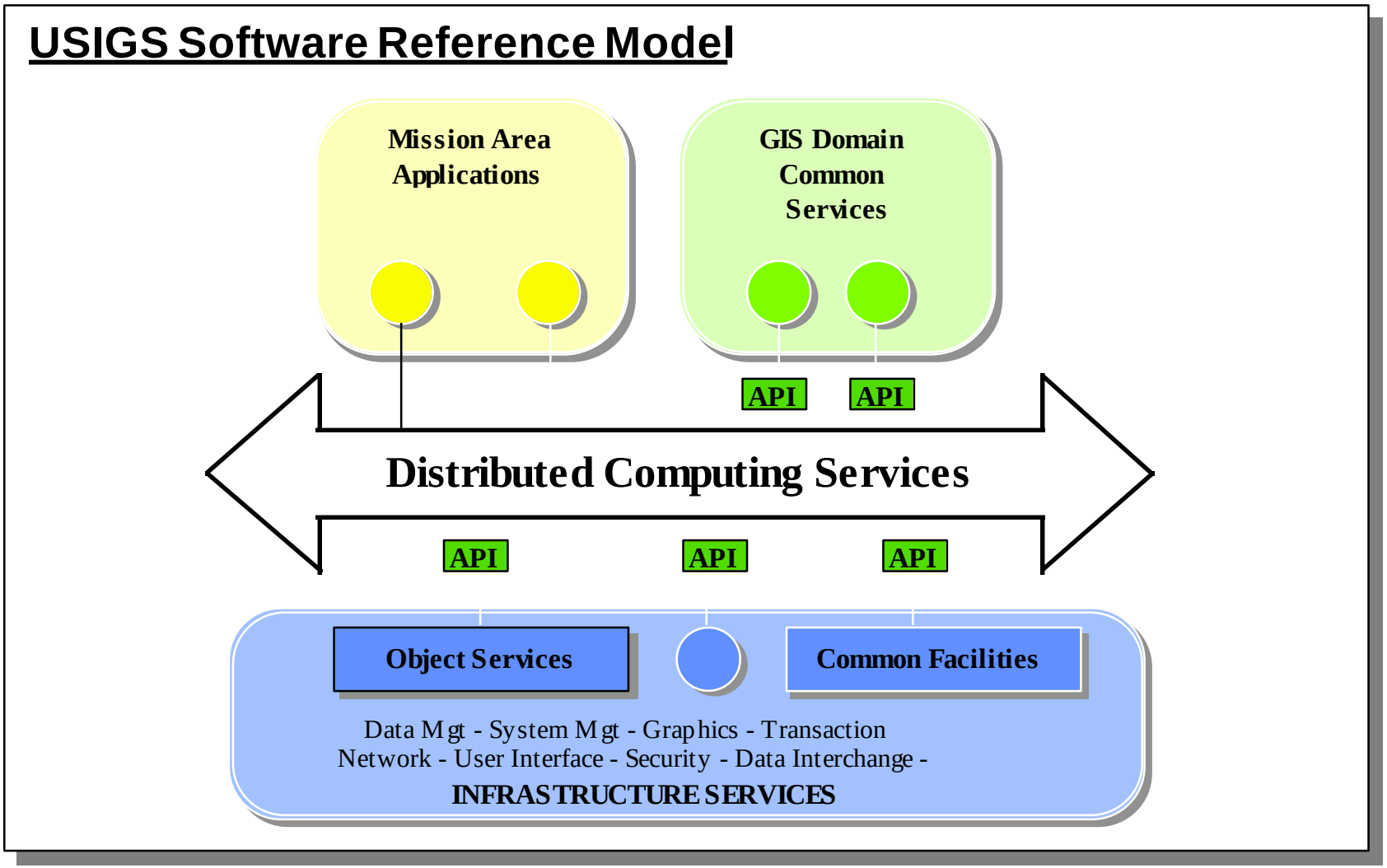
- Basic philosophy reflects object-oriented, network-centric paradigm of software development.
- Establish Technical Reference Model as a framework to achieve development & implementation objectives:
  - CIIF - Common Imagery Interoperability Facilities (and its geospatial extensions).
- Key concepts:
  - Use standard APIs (written in ISO IDL).
  - Promulgate an open architecture.
  - Establish fundamental collection of infrastructure services.
  - Define collection of Common Support Applications and Common Facilities.

Guiding Philosophy of NIMA Response (Continued)

CIIF Technical Reference Model

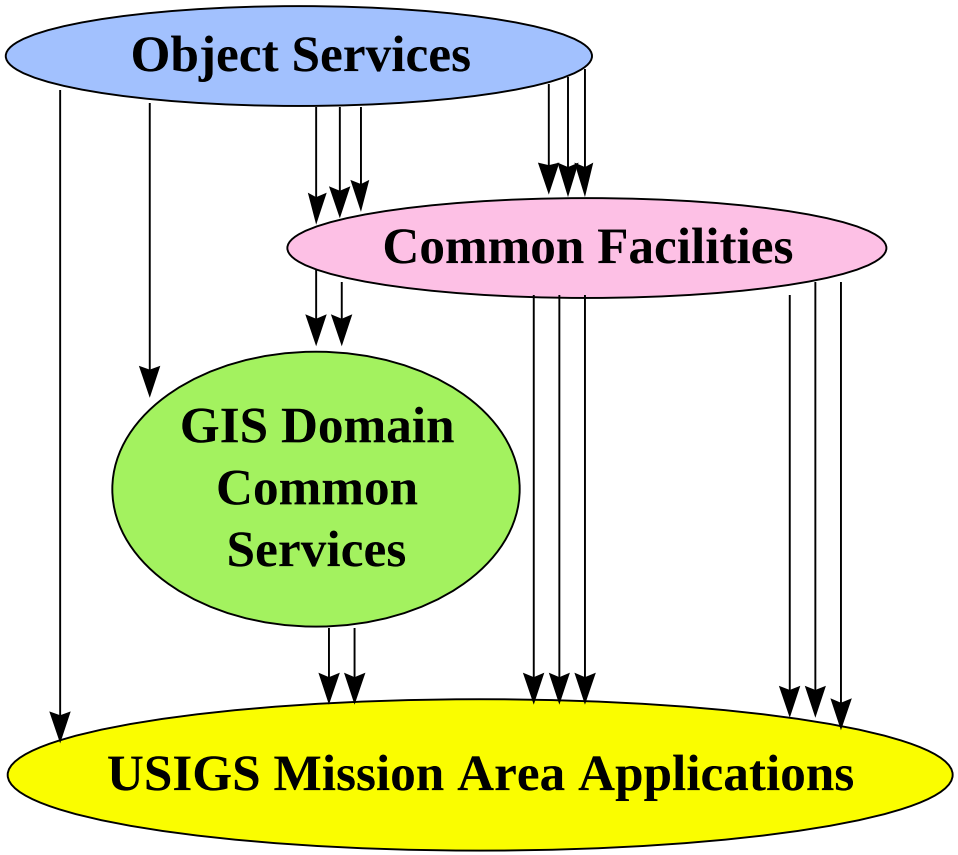


Guiding Philosophy of NIMA Response (Continued)



Guiding Philosophy of NIMA Response (Concluded)

Software Component Reuse



Globally-Applicable Fundamental Services

Higher-Level Facilities

Specialized GIS Services

Application Software that Makes Extensive Use of More General Services

Request Items

- RI1 - The Definition Of A Geospatial Catalog Facility.
- RI2 - Identified Sets Of Catalog Service Components.
- RI3 - Interdependencies Among Components.
- RI4 - Extensions/Changes To OpenGIS and/or DCP Services Used To Construct Catalogs.
- RI5 - The Proper Role Of Metadata In Cataloging.
- RI6 - Catalog Signature.
- RI7 - Access Services And Issues.
- RI8 - Query Requirements On Catalogs.
- RI9 - Catalog Types.
- RI10 - Naming Issues.
- RI13 - Information Concerning Existing Implementations.
- RI14 - Distributed Computing Platform (DCP) Options.

Summary Of NIMA Response

- Overview elaborated on guiding philosophy; suggests that OGC strongly consider an approach consistent with this philosophy.
- Found RFI to be too narrowly focused, as many request items are concerned with lower-level, infrastructure-dependent details.
- Interpreted RFI as really asking for information on a broad range of digital library services, rather than catalog services only.
- Referenced draft ISO standard Reference Model For An Open Archival Information System (OAIS) as providing a framework for a complete range of digital library services.
- Image Access Services (IAS) consistency with OAIS described.

Summary Of NIMA Response (Continued)

- No extensions or changes proposed to OpenGIS or DCP service models at this time.
- Recommended that services and interfaces be defined to be technology-neutral and schema-independent, as Image Access Facility (IAF), Catalog Access Facility (CAF), & Profile and Notification Facility (P&NF) are in the IAS Specification.
- NIMA Geospatial Data Standardization Project (created to be compliant with DoD Directive 8320.1) provided as example of metadata model.
- Emphasized that pecific implementation environments (ODBC, CORBA, OLE/COM, Internet/Java) are language-independent and do not impact the interfaces for a catalog service facility that is specified in ISO IDL.

Summary Of NIMA Response (Concluded)

- **Recognized the heterogeneity of the distributed digital geospatial & imagery library holdings environment**
- **Recommended continued OGC collaboration with OMG to ensure completeness in OMG proposals for geospatial & imagery requirements, propose extensions if necessary:**
  - **OMG Trader Service to support information discovery of geospatial & imagery information.**
  - **Internet Information Discovery.**
  - **Naming issues (an Object Service).**

What's Next?

- OGC RFI Deadline: 1/27/97.
- OpenGIS Services Working Group (OSWG) meets at Intergraph in Huntsville AL 2/11/97-2/13-97.
- OSWG reviews all Catalog Service Interfaces RFI responses.
- Other responses expected fromFederal Geographic Data Committee (FGDC), others.
- Formulate revisions to OGIS Abstract Spec, and develop RFP, based on Catalog Service Interfaces RFI review.

Reference Documents

- **NIMA Documents**
  - **Common Imagery Interoperability Facilities (CIIF) Reference Model, Version 2.0.**
  - **Imagery Access Services (IAS) Specification, United States Imagery System, Version 1.1.**
  - **DoD Geospatial Data Standardization Project Report, Volume 3, Geospatial Metadata.**
  - **Global Geospatial Information & Services (GGIS) for the Warrior.**
- **DoD Documents**
  - **Joint Technical Architecture (JTA), Version 1.0.**

Reference Documents (Concluded)

- **Industry Documents**
  - **Reference Model For An Open Archival Information System (OAIS), Draft Version 7.0.**
  - **IEEE Reference Model for Open Storage Systems Interconnection (OSSI).**
  - **ISO IDL (ISO/IEC DIS 14750).**
  - **The Common Object Request Broker: Architecture and Specification (CORBA) Version 2.0.**
  - **IEEE The Portable Operating System Interface (POSIX).**
  - **Z39.50 Profiles for Access to Digital Collections; Digital Library Objects.**

- **What follows can be used for OGC presentation**

Request Items

- **RI1 - The Definition Of A Geospatial Catalog Facility**
  - **OGC seeks definitions of a catalog facility and the identification of problem areas to which they apply.**
  - **NIMA response:**
    - **Entire spectrum of digital library services is applicable, not just catalog facilities.**
    - **Use draft ISO Open Archival Information System (OAIS) as basis for work in this area.**
    - **OAIS diagram?**

Request Items (Continued)

- **RI2 - Identified Sets Of Service Components Comprising A Catalog**
  - **OGC seeks information on set of services that catalog facility should provide to users, librarians, developers**
  - **NIMA Image Access Services (IAS) Specification, especially the Catalog Access Facility (CAF) and Profile & Notification Facility (P&NF), identified as a viable approach to stated problem.**
  - **IAS consistency with OAIS demonstrated.**
- **RI3 - Interdependencies Among Components**
  - **OGC seeks information on interaction of components of a catalog facility and the interfaces they support.**
  - **NIMA says this cannot be addressed independently of components themselves; topic addressed in RI2 response.**

Request Items (Continued)

- **RI4 - Extensions/Changes To OpenGIS and/or DCP Services Used To Construct Catalogs**
  - **OGC seeks information on unique extensions that catalog facilities require to operate in the environment %%%%**
  - **NIMA proposes no changes to OpenGIS or DCP service models at this time.**

Request Items (Continued)

- **RI5 - The Proper Role Of Metadata In Cataloging**
  - **OGC Seeks information on**
  - **NIMA says metadata required to (etc.)**
  - **look at 8320.1 and DDDS work**
  - **relationship diagram to other activities?**
  - **IAS SPIA, FGDC, ESD, NITF, CIIP, etc.**

Request Items (Continued)

- **RI6 - Catalog Signature**
  - **OGC seeks information on how catalogs and their holdings advertise their existence.**
  - **NIMA says look at OMG Trader Service**

Request Items (Continued)

- **RI7 - Access Services And Issues**
  - **OGC seeks to identify types of acccess services that must be supported to manage and manipulate geospatial metadata in a catalog facility. Information on such issues as scalability, reliability, integrity, maintenance, security, cost, expandability, etc. are sought.**
  - **NIMA says these are lower-level infrastructure isues - OGC should focus on services inherently and uniquely geospatial in nature.**

Request Items (Continued)

- **RI8 - Query Requirements On Catalogs**
  - **OGC seeks information on designing and implementing catalog signatures, and queries with spatial, temporal, structured, and textual attributes are**
  - **NIMA says standard interfaces are the way to go - look at CAF and stay away from implementation-specific solutions.**

Request Items (Continued)

- **RI9 - Catalog Types**
  - **OGC wants to know if catalogs should contain both feature collection and catalog reference entries.**
  - **NIMA recognizes the heterogeneous nature of geospatial catalog implementations - trader plays role - see OMG trader Service**

Request Items (Continued)

- **RI10 - Naming Issues**
  - **OGC seeks information on strategies for naming of feature collections to support long-term persistent access to these objects.**
  - **NIMA says this is a key issue for USIGS. Look at CIIF to determine relationships to other components. look at OMG etc to determine geospatial deficiencies, then collaborate to work toward consensus solution to the problem.**

Request Items (Continued)

- **RI13 - Information Concerning Existing Implementations**
  - **OGC seeks information on specific catalog implementations using Z39.50, SGML, etc.**
  - **NIMA says these are lower-level infrastructure details that OGC should not be concerned with. OGC should focus instead on identifying common services, interfaces, and architectural components, and ensuring consistency.**

Request Items (Concluded)

- **RI14 - Distributed Computing Platform (DCP) Options**
  - **OGC seeks information on the impact of specific DCP implementation environments (e.g., ODBC, OLE/COM, CORBA, Internet/Java) on implementation of catalogs.**
  - **NIMA says that the implementations listed are language-independent and have no impact on the interfaces that qould be defined for a catalog facility. NIMA recommends that interfaces be written in ISO IDL so that the details of implementation do not matter.**
  - **Benefits of ISO IDL**
    - **Widely accepted specification language for modern ICDs.**
    - **Vendor, platform, and language independent.**
    - **Complete and rigorous specification notation.**
    - **Standard language bindings enable it to be compiled.**
    - **Can be used with, or independently of, OMG's Object Management Architecture.**

Basic OpenGIS Service Concepts